

*Virginia
Wildlife*

JANUARY 1972

VOLUME XXXIII / NUMBER 1
20 CENTS



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Virginia Wildlife

**Dedicated to the Conservation of
Virginia's Wildlife and Related Natural Resources
and to the Betterment of
Outdoor Recreation in Virginia**

Published by VIRGINIA COMMISSION OF GAME AND INLAND FISHERIES, Richmond, Virginia 23230



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JANUARY

Volume XXXIII/No. 1

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Observations, conclusions and opinions expressed in *Virginia Wildlife* are those of the authors and do not necessarily reflect those of the members or staff of the Commission of Game and Inland Fisheries.

COVER: Whistle wings (American goldeneyes) at dawn, by Carl "Spike" Knuth, Fond du lac, Wisc.

SUBSCRIPTIONS: One year, \$2.00; three years, \$5.00. Make check or money order payable to Treasurer of Virginia and send to Commission of Game and Inland Fisheries, P. O. Box 11104, Richmond, Virginia 23230.

VIRGINIA WILDLIFE is published monthly at Richmond, Virginia, by the Commission of Game and Inland Fisheries, 4010 W. Broad Street. All magazine subscriptions, change of address notices, and inquiries should be sent to Box 11104, Richmond, Va. 23230. The editorial office gratefully receives for publication news items, articles, photographs, and sketches of good quality which deal with Virginia's soils, water, forests, and wildlife. The Commission assumes no responsibility for unsolicited manuscripts and illustrative material. Credit is given on material published. Permission to reprint text material is granted provided credit is given the Virginia Commission of Game and Inland Fisheries and VIRGINIA WILDLIFE. Clearances must be made with photographers or artists to reproduce illustrations.

Second-class postage paid at Richmond, Va.

Virginia's Marshes

MARSHES mean many things to many people. To most they are wastelands, good for trash disposal but otherwise of no value until they are ditched, or diked and filled. To the rail and duck hunter they are essential for gunning. To the trapper they provide valuable pelts. To those few whose homes overlook a marsh, they mean a pleasing view.

To the environmental scientist they mean many more things: A source of food that eventually goes into fish, a sponge to absorb water and slowly release it, a tough sod to prevent bank erosion, a longer river to slow tide and flood waters, the only place where many scarce animals and plants can survive.

The tidal marshes and swamps of Virginia cover approximately 240,000 acres. Marshes are the most primitive areas we have. Each sizable marsh is thousands of years old, yet it is a "brittle" environment. It is "brittle" because man can so easily destroy it with a machine but could not replace it without great effort.

We cannot eat marsh grass but neither do insects and muskrats eat much of it. In river marshes much of it is swept into the water within a year. Here it is acted on by bacteria which make it richer in food value for tiny crustaceans that are eaten by fish and by oysters and clams which may be eaten by us. Our data show Virginia marshes producing up to 7 tons of grass per acre each year and averaging over 3 tons. Good farmers may produce more than this per acre, but they require much energy to do it. Furthermore, people tired of eating chicken and diet bread will pay more for seafood. The privilege of obtaining it personally by fishing and hunting increases the value greatly.

Developers can pay far more for marshland than sportsmen can, but they may ruin what the seekers of a waterside home were looking for. Industry can pay very large sums for water front but it can also locate elsewhere; a marsh can only stay or die. Marshes are constantly being cropped by nature but they are not renewable resources.

Decision-makers must deal with the future of our wetlands: Should they be paved or preserved? Their production mostly benefits people other than the owners. Thus, individuals are apt to spend this capital, to "use up" the marsh rather than allow future generations to draw interest from it. It is imperative that wetlands be considered for maximum utilization for all people, not just a few special interest groups. To do this will require the patience of Job, the wisdom of Solomon, the prophetic ability of Jeremiah, and the persistence of Paul. It will take the collective efforts of legislators, ecologists, resource managers and all concerned citizens to bring this about. North Carolina has had one-third of its most valuable marshland, the regularly flooded salt marsh, altered in the last 15 years. The Yorktown-Gloucester Point area shown on the Colonial National Battlefield map has lost 69% of its marsh in less than 30 years. The marsh day grows late—can we afford to let it end?—(Courtesy Virginia Institute of Marine Science)

Comments on Past Issues

I just finished the article "Canoeing New River in Early Fall" (*Virginia Wildlife*, October, 1971). It was real good, but I take exception to the author's statement, "New River . . . flows northeast through the highest points of Virginia and West Virginia to empty into the Ohio River near Charleston, West Virginia."

Remind the author, Bob Beck, that New River joins with the Gauley at Gauley Bridge to form the Kanawha, and that the Kanawha empties into the Ohio at Point Pleasant.

Dick Sims
Alderson, W. Va.

I was interested in the article by Wallace Obaugh, "Panther Stories." It recalled to mind an incident which happened in the early 1950's. Lloyd Entsminger of Route 2, Lexington killed a long-tailed cat on the top of Short Hill. I saw the animal when he brought it from the mountain. It was hanging by its hind legs from the top of the cattle rack of a pickup truck and its head and forelegs were resting on the floor of the truck bed. The tail was 1½ to 2 feet long and the entire animal probably weighed 75 pounds. It was of a tawny color and appeared to me to be a panther.

J. Granville Johnston
Lexington

THE brief mention of state land that will be offered to developers in Highland Wildlife Management Area left out many important facts which I hope you will allow us to tell your readers.

The ski development is really to be a 15 million dollar resort hotel complex, and the developer expects 4,000 to 5,000 people per day to use the ski slope. The project is being opposed by several environmental and sportsman's groups not only because of the dangerous precedent it would set, but also on pollution and ecological grounds.

This proposal is not final, and must be approved by the General Assembly. We urge interested citizens and sportsmen to get the facts, and then write their representatives about this. We will gladly send information to anyone writing us at Box 1051, Middleburg, Virginia 22117.

John E. Malone
Highland Association
Middleburg

MY sincere thanks go to your editorial "November Afield" and Bill Cochran's "The Hunter: A Man Who Can Be Proud," which led off your excellent November issue. On the eve of hunting season this is exactly the philosophy that the hunter needs to be reminded of. The weight of the game bag doesn't always measure the pleasure of the hunt. I know that in my case reading these articles will temper my drive to fill the bag to one of enjoyment of the many pleasures of a day in the field.

Bob Willard
Evinston



Three More Grouse for the Old Lady

By BILL COCHRAN
Roanoke

TOWARD the end of the past grouse hunting season, I had a rare winning streak going for me, having bagged the last three birds that thundered out of the cover. I'm really not that good. And grouse certainly aren't that easy.

But there was the evidence. Three plump birds clothed in magnificent chestnut feathers. Full of pride, I showed them to my wife. I was about to set aside a couple for a feast. I believe there are two magnificent ways to savor a grouse. One is to view it winging unobstructed and straight away over the gaping barrel of a shotgun. The other is to feast upon it when it is breast upright, golden brown, steaming and fragrant.

Then my wife had an innocent suggestion that brought a gruff response. "Why not freeze these three and get three more? Then we can invite your folks and my folks over for a feast."

"Curses, woman!" I shouted. "You've ruined me. I had a winning streak going. You've spoiled it. How do you expect me to bag grouse under such pressure?"

The only way for a grouse hunter to keep his winning streak intact is to quit the sport. Grouse are difficult targets. They are a rugged and supreme challenge to mankind wearing a hunting jacket. My mouth is agape with surprise every time one falls before the roar of my gun. When I get three in a row, something certainly has gone wrong with my shooting.

Reliable sources say that a harvest record of one out of four shot at puts you in a bragging position. Even the experienced members of the Ancient and Honorable Order of Brush Worn Partridge Hunters (AHOBWPH)* last season bagged but 33.7 percent of the grouse they shot at. And members are among the most skillful and devout grouse hunters of all. This record,

of course, doesn't belittle the accomplishments of AHOBWPH members. It points out the fact that grouse are a phenomena of the forest.

In short, grouse hunting isn't meat hunting, and that's one of the things which make it so great. There is work to it. Members of the AHOBWPH last season found they had to hunt on the average 1.72 hours for each grouse flushed. They got shots at 35.7 percent of these birds. As has been mentioned, they bagged 33.7 percent of those shot at. Summing it all up, it took 4.9 hours of hunting for each bird bagged.

I might point out that those were 4.9 hours of hard hunting. Nothing is easy about bagging a grouse, in my opinion. These birds live in difficult terrain. A successful hunter must have the determination, the willing-

Hunters move in behind dog working good grouse cover.



* The Ancient and Honorable Order of Brush Worn Partridge Hunters is an organization of about 2,000 grouse hunting fans, mostly from Pennsylvania, New York, Ohio and West Virginia, who share their notes and enthusiasm through a monthly newsletter. Membership dues are \$2.00 per year payable to George King, RD 1, Box 61, Jeannette, Pa., 15644.



Game Commission Wildlife Management Areas and National Forests in Virginia provide all hunters with opportunity for an encounter with grouse.

ness, the stamina and the curiosity to penetrate acre after acre of grouse cover until he unseats a bird. Such sport leaves many hunters out.

Just finding a bird, of course, is no guarantee of a roast grouse dinner. More so than other game birds, grouse are artful in deceit. Sometimes, they'll flush a half mile away. Other times, they'll sit it out and let you march right by. The trick they like best of all, though, is to unnerve you by flushing right beneath your feet, exploding like a grenade. It is a raucous act that can send you back on your heels. And by the time you have recovered from your paralysis, the grouse skillfully has put timber between himself and you with a series of astonishing, high speed twists and turns. He might just as well be riding off in an armored tank for all the harm you can do him then.

Why bother to hunt them? What's the use? I considered that briefly as I pondered preserving my winning streak. But not for long. I love the pursuit of this bird. He is my favorite target. Hunting grouse is a tonic for me. Come grouse season, my health is always better, physically and mentally. I see better. My hearing is improved. I react quicker. My muscles grow supple-hard and my head clears. I take up my belt a couple notches, and I surprise myself how far I can charge up a mountainside without becoming winded.

Why hunt grouse? These improvements of body and mind are one reason. But there is more. Indeed, stubble-bearded men tend to grow misty-eyed with romanticism when such a question is asked.

Why hunt grouse? Because they are grouse. Here is an independent character, a wild creature, a self-sufficient individual. You can raise turkeys, quail and pheasants in game farms, but not grouse. Other than improve his habitat, game officials often find they can do little

for him, except watch him, and wonder about him.

Yet he survives, living along the fringe of the wildlands. Some people wonder if he won't out-survive mankind by simply doing what he has been doing for the past 25,000 years, despite snows, despite wet springs, despite declining cover and, especially, despite the lead thrown at him by hunters boasting a winning streak.

There was no putting it off. That fourth bird had to be confronted. The winning streak must be put to a test. The place I chose was an abandoned and crumbling Blue Ridge Mountain farm. Once fiercely independent settlers here had cut trees, built a house, hung hay crops on the hillsides and sent split rail fences zigzagging along pasture boundaries.

Now they were gone. Their toil had left but a faint impression. It was a good place for grouse, especially where the old rail fence struggled along the hillside. The fence was a perfect grouse pathway, since grouse are more pedestrian than flyer. The ridge above it contained clumps of conifers with interwoven branches that provided an ideal roost, a retreat from the swooping hawk and the soft-winged owl. The grouse could become a weathered, inconspicuous protuberance against the trunk of a pine by night, then leisurely leave the evergreens in the morning and follow the fence down to that Garden of Eden provided by the venerable homestead. In short, it was the kind of place a grouse hunter calls "grousey."

And it was along that fence, at the base of an oak tree, wrapped by an ancient grapevine as thick as my wrist, that I encountered the fourth grouse.

My young Brittany Spaniel went on point. You can hunt grouse without a dog. But to me, that is like eating without using your taste buds. A dog is a wonderful

(Continued on page 21)

THE spinning world, in measured pace, creates day and night, the months, the seasons. The tilting of the earth on its axis away from the sun shortens the days until the minimum hours of daylight fall on the twenty-second of December, when winter begins, which then ends with the vernal equinox on March twenty-first.

The kaleidoscope of color has passed. The brilliant pageantry of the trees has become one of bare limbs, etched lines and angled branches that creak and rattle. The cacaphony of migrating birds is silenced. The earth is hard underfoot and the landscape is dull as the sun shines less than ten hours on any day, if it shines at all.

Snow comes, sometimes powdery, which tosses wild and free, to make and remake furrows along natural contour lines. Other snows may have flakes to cling to every twig, each needle of pine and cedar, and turn sprays of hemlock into lacy fans. Little nests of last



While all looks peaceful and at rest, winter really is a time of stress.

summer are overflowing white cups. The rhododendron leaves droop forlornly, while the mountain laurel is proudly erect in white shawls. The earth seems to stand still.

It is generally believed that winter is the time for nature to rest, with the harvest past and too early for the upsurge of spring. Instead, in this mystical interlude all is not quiet and at rest. Wildlife faces its greatest challenge. Springtime's rebirth does not just happen; the winter months are spent getting ready as there is an inherent sense of survival in everything that lives: the roots and plants, the wildlife along the river and shells and fins, the wildlife in the forest, and the creatures that fly, creep or crawl. Everything that breathes hopes to live to reproduce its species. All of these must cope with winter.

The birds, dependent on insects and foods found in warm weather, grew restless as the days shortened. Singly or in social groups they winged south along mysterious flyways. Migration is invariably tied to the necessity of finding food supplies. Perhaps they journeyed thousands of miles, perhaps to the next state. The air-journeys are full of peril which they faced in order to skip winter and come back to nest again.

The resident birds, now dressed in heavier plumage after the summer molt, have knowledge of food resources that range from birdfeeders in the yards of hospitable people to apple orchards, cornfields, and weedy, seedy thickets. The wild turkeys, grouse, quail and pheasant know where mast lies rich on the forest floor. They know that conifers offer the best shelter and for some reason the level of snow there is lighter and thaws faster.

All members of the woodpecker family depend on the trees for year-around food. As long as there are trees there will be some kind of insects under the bark in any season. The great pileated pounds on a decayed stump close to the yard in the early morning but later in the day it hammers with its long sharp beak on trees on the upper hill. The hairy, the downy and the upside-down nuthatch scratch around and around a tree trunk with inquiring beaks, poking into crevices, peering into scarred wood for insects. The red-bellied wood-

WINTERTIDE

By KATHERINE W. MOSELEY

Photos by Graham Moseley

pecker is most often seen on the suet hanger.

The blue jays, cardinals, doves and crows with occasional out-of-state visitors keep the yard lively and provide color against the deep green evergreens. Their choice of food is fine cracked grain liberally sprinkled with sunflower seeds. The shriveled, dried fruit of orchard and vine take second place on their diet preference list. The crows, chickadees and titmice take their turn at the suet along with the woodpeckers.

The chickadees, juncos and titmice may find a praying mantis eggcase to pry open for the eggs but they like best a homemade mixture of scratch feed and sunflower seeds smeared with lard and poked into cavities in a thick wooden feeder which hangs in the dogwood tree. These birds leave our yard for the summer for the cooler woods close by but return often for a hopeful inspection of their old empty feeder which is left hanging all year.

Even with warmer, winter fur and thicker, downier feathers most animals and birds seek some kind of shelter in severe winter. We see an entrance under the snow to the tunnel of the field mice and know they nibble the bark of the cherry tree. The great hemlock that had to be felled after lightning struck has a hollow

in its trunk. We know it is a refuge but are not sure for what. A briar patch rabbit-run thatched with fallen leaves and then covered with snow makes a snug resting place for the cottontails. Squirrels use their fluffy tails as umbrellas or blankets. A squirrel wrapped in his tail, crouched in the crotch of a tree, looks very like a fur-coated spectator at a football game. There are five squirrel nests in five trees just outside our front fence that are used during moderate weather but seem deserted in snow with the squirrels using natural tree cavities or abandoned pileated nest holes. The eager beaver long ago laid in a supply of small willows, birches and wild cherry trees for winter food. Only the bark is eaten and the peeled sticks added to the dam.

Groundhogs make no such preparations. To them winter is for sleeping and into their underground home they go with no intention of coming out until the



Everything that lives hopes to live to reproduce its species, and all must cope with winter.

weather is comfortably warm. Ground Hog Day or not. Farther north the bears hibernate and during that period the she-bears gives birth to the cubs.

Other species of wildlife suspend life and hibernate: snakes stay in dens in the earth or nestled under rocks; many insects stay dormant as eggs or in cocoons. Some insects remain as pupae in the autumn and winter and emerge as perfect insects in the spring. Turtles and frogs settle in the mud of the river. The perch will survive in an icy pool if the body is not frozen. Bats seek shelter for the winter in a cave, a hidden nook in a barn or empty building where they sleep in hibernation while clinging to the walls, head down.

Chipmunks are partial hibernators; their sleep is not profound and they awaken occasionally in the under-

ground nest to uncurl and feed on the supplies gathered so industriously through the summer and fall to store in the food-room of their home. Foxes, skunks, raccoons, and opossums do not hibernate but must have dens into which to retreat and sleep until the snow is lighter and the weather moderates for foraging. These animals prepare for winter by eating heavily through late summer and early fall of the largesse of harvest to add layers of fat to their bodies which in turn give heavier, warmer fur. The winter hair or hide of the white-tail deer does not appear different from the summer coat; yet it has been learned that the hairs of the summer hide are slender, straight and solid while the winter hairs are stout, hollow and contain dead cells inside of them that act as insulation. Like the wild fowl, the deer is dependent on mast on the forest floor. If the snows are heavier than their sharp hooves can dig through to unearth food, they must reach for the terminal portions of twigs on trees and bushes. If the snow continues, they often seek lower levels with less snow. The will to live is the greatest drive on earth and each animal by instinct and heritage does what it must to make affirmation of the past and hold out a promise for the future throughout the winter months.

Perhaps nothing testifies better to the flow of winter into spring as does plant life. Mature plants lose their leaves and appear to be pulled down into the earth or else disappear. Stiff, stark weeds hold capsules with a treasure of seeds within. Sooner or later the capsules burst and seeds fall which the birds may eat and scatter. Wild milkweeds pods split and let loose minute seeds firmly held in bits of gossamer fluff. These may float a few yards or be blown by the wind for many yards. The seeds fall, the floss disappears, and an embryonic plant is in the making. Each seed of every plant is cradled by earth, softened by rain, blanketed by snow. Down under the cold earth, roots, rhizomes, and bulbs anchor the seeds and hold them in place until it is time for new plants to break loose from trailing rootstock and bulbs rich in bulblets. The preliminary steps to becoming a plant are often made before the first thaw of spring.

There are many instances in plant seedlings and insects' eggs where cold is essential. It has been found that some seedlings and eggs that have not been frozen produce stunted plants and weakly insects. All gardeners know of the period of cold that bulbs must have for early spring flowering.

For some animals and plants, spring never comes. In every wildlife species certain ones have paid by death for their weakness or by another's strength. This happens in the cycle of each season.

Winter of the cold earth, short days, icy winds and frozen nights seems like a dark, dreary period, but the season could be likened to the heavy, textured, dark fabric of a tapestry whereon will be woven the trailing arbutus and crocus of spring, the butterflies and the roses of summer, the goldenrod and persimmons of fall. All of which would be impossible without winter.

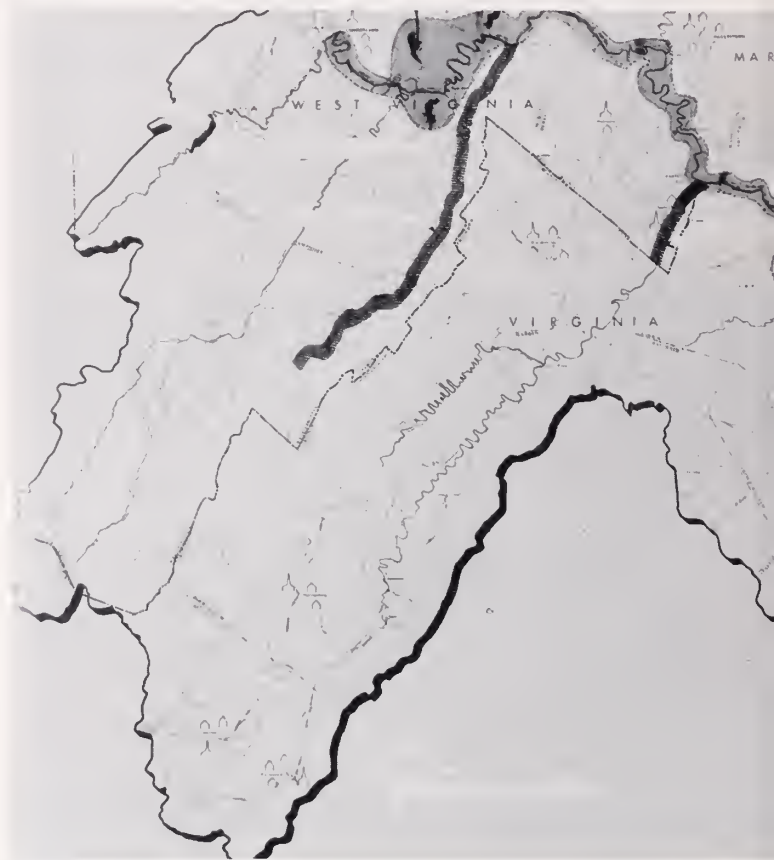
WHEN Captain John Smith first sailed up the Potomac River in the early sixteen hundreds, he gave the river the name of "Patawomeke." It was the Algonquin Indian name of the area occupied by what is now Washington. It meant, "the place to which tribute is brought." How prophetic this name proved to be was left to history. Since that time, the Potomac has cradled much of America's history; and in spite of the urbanization of much of the lower reaches of its basin, it remains one of the most beautiful and least-spoiled rivers in the eastern United States. For the people who live along its banks and in its basin, it is a land flowing, literally and figuratively, with milk and honey.

The Potomac River, draining some 14,670 square miles in Virginia, Maryland, West Virginia, Pennsylvania, and the District of Columbia, is a major natural resource for the nation. It provides water and land for crops and industry, fish, and outdoor recreation. In Virginia, some 6,000 square miles are drained by this river. It has its beginning in Virginia up on the eastern slope of the Appalachian Mountains in Augusta and Highland Counties. Up near Hightown in Highland County there is a barn which reportedly is at the very headwaters of both the Potomac and James Rivers. Rain falling on the east side of the barn roof flows into the Potomac; that on the west side, into the James. During its course from its origin high in the mountains of Virginia and the other states it drains, the Potomac is fed by more than 20 major tributaries. In Virginia, the Shenandoah River is the principal tributary. Almost 3,000 square miles or 14 percent of the land area of Virginia is within the Potomac River Basin, and it includes all or part of 15 counties from its headwaters in Highland County to Westmoreland County where it joins the Chesapeake Bay. The bulk of human population of the Virginia portion of the Potomac River Basin is located across the Potomac from Washington, D. C., in Fairfax and Arlington Counties, and the cities of Alexandria and Falls Church. Much of the rest of the Basin is rural in nature although the Washington suburbia complex is spreading outward at a rapid rate. Population growth in this general area is at a much faster rate than that of the nation as a whole.

The present wildlife populations in the Virginia portion of the Basin are still good. The buffalo that roamed the Basin are gone, but most of the other wild animals such as the white-tailed deer, wild turkey, bear, waterfowl, etc. are still to be found here. Even "close-in" to Washington itself relatively large tracts of forest land remain and provide excellent forest game habitat. A huntable population of white-tailed deer is now to be found in all the counties of the watershed, and the wild turkey is not uncommon in close proximity to the urban areas in the lower reaches of the Basin. Big game hunting, including deer, wild turkey, and black bear, is prevalent throughout the Basin, with the black bear being hunted primarily on the George Washington National Forest. Small game animals, consisting of ruffed grouse, quail, squirrel, and rabbit, are hunted throughout

VIRGINIA'S POTOMAC RIVER BASIN

Its Wildlife — Present and Future



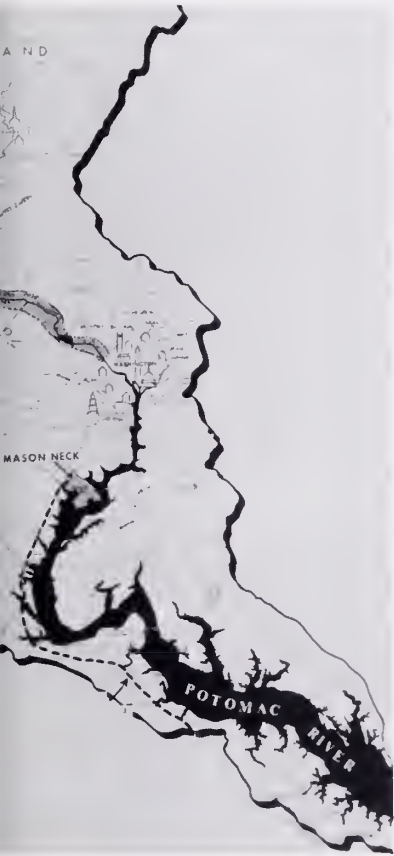
the Basin on both public and private lands.

Fishing opportunities in the Basin are highly diversified. In the upper reaches of the Basin, numerous fishable streams are stocked annually by both state and federal agencies with brook and rainbow trout. Native trout fishing is still found in many of the headwater streams. The Shenandoah and the South Fork of the Shenandoah provide some of the finest smallmouth bass fishing in the eastern United States. Lakes and ponds throughout the area produce fine catches of largemouth bass and bream. In the salty waters of the Potomac and its tidal tributaries to the Chesapeake confluence, sport fishing and water-sport resources are unexcelled.

It is estimated that over ¼-million hunters spend almost 4-million hunting days a year in the Potomac Basin, and this use is expected to increase to 5-million hunter days by 1985. Nature study, photography, and related activities add greatly to this use of wildlife resources. Virginia's portion of the use of the wildlife resources found in the Basin probably exceeds that of any of the other states in the Basin.

Hunting opportunities in the Virginia portion of the

By J. E. THORNTON
Supervising Game Biologist



Basin are still good, and anyone looking for a place to hunt either small or big game can normally find a place to hunt. Much of the public lands lie west of the Blue Ridge Mountains along the Shenandoah River and its headwaters. Approximately 412,000 acres of a total of about 928,000 acres in the Virginia portion of the George Washington National Forest is in the Potomac Basin. The Virginia Commission of Game and Inland Fisheries and the U. S. Forest Service work together under a cooperative agreement to provide for the utilization and management of the wildlife resource on National Forest lands here and elsewhere in Virginia. The 1,300-acre Commission-owned Wunder Wildlife

Management Area in Rockingham County adjacent to Forest Service land also provides good hunting.

The Quantico Marine Base, comprising a total of over 54,000 acres in the lower reaches of the Basin, and the A. P. Hill Military Reservation, an area of over 80,000 acres just out of the watershed, are both open to public hunting under a similar cooperative agreement. Numerous other military reservations found in the Basin are relatively small, but provide some hunting for military personnel stationed in the area. Small game hunting is still to be had on private land throughout the watershed, and it is especially good in the lower reaches of the watershed.

Most of the problems of the future related to the wildlife of the watershed are directly related to people. The increasing need for space for highways, cities, shopping centers, factories, and all the other things that go along with an expanding human population is rapidly reducing the available wildlife habitat. Unfortunately, wildlife always has been and probably always will be a by-product of other land uses; and if it is to survive, it must adapt to changing land use patterns, and there is little place for wildlife on the asphalt of city streets

and the brick and concrete of an apartment and office building complex. Clean farming and a grassland type of agriculture result in the destruction of cover for small game. More intensive forest management, such as the even-aged management of timber land being practiced by both public and private landowners, especially in pine pulpwood production, further limits the habitat for some wildlife species. As the use of available land becomes more intensive for whatever use, less private land is available for hunting because of posting. On the opposite end, some public land, such as the National Forest, is becoming too accessible, creating problems in management for some game species such as the black bear and wild turkey.

In the Northern Virginia area, one of the major problems is the lack of public hunting lands and perhaps the failure to permit public use of public lands to the maximum extent possible, not only for hunting but for other recreational uses. An acquisition program carried on by the Virginia Game Commission has resulted in approximately 150,000 acres being available for public hunting. Only 1,400 acres of this Commission-owned land is in the Potomac Basin. The great demand for land in the vicinity of the Washington megalopolis has so inflated the cost of land that it is very difficult to acquire land at a reasonable price. Efforts are being made to negotiate mutually beneficial cooperative agreements with large landowners to provide additional hunting opportunities in the Basin. Such an agreement has recently been worked out with the West Virginia Pulp and Paper Company, whereby approximately 4,000 acres of land in Spotsylvania County has been opened to the public. Other large tracts owned by pulp and lumber companies are generally open for public hunting under a permit system for a small annual fee. Commercial shooting preserves offer an additional outlet for the small-game hunter willing to pay for the privilege and are gaining in popularity each year. Programs to assist landowners and hunt clubs with free wildlife planting materials and farm planning have been expanded here, as elsewhere throughout the state. The overall objective here, as elsewhere, is to provide the most recreational opportunities to the largest number of people without detrimental effect on the game species involved.

The Potomac River Basin in Virginia has been, and will continue to be in the future, one of the most productive wildlife regions in the state. Certainly if studies and plans are of any significance, the Basin has a bright future, as something like 20 federal agencies have conducted studies and made plans to cover every conceivable aspect of the river and the Basin. Residents of the Basin and of the entire state of Virginia are extremely fortunate in having so much publicly owned land located within the watershed. The National Forest, the military lands, and privately owned cooperative lands providing recreational opportunities in the Basin are indeed a resource worthy of the best efforts of the agencies or persons responsible for their management—be they federal, state, or private citizen.

Self-Supporting Game Land Management

By JAMES W. ENGLE, JR.
Game Commission Forester

Commission photos by Kesteloo

OF the 150,000 acres of lands now owned by the Virginia Commission of Game and Inland Fisheries, the first tract purchased was Havens Wildlife Management Area of 5,738 acres in 1930. For a long period following, no purchases were made until the buying of Hog Island Waterfowl Refuge (2,485 acres) in 1952. Since acquiring the Gathright Wildlife Management Area (18,392 acres) in 1958, the Commission has been actively acquiring new lands, and now owns 22 different areas in the state totaling approximately 150,000 acres. The areas are scattered from the edge of the Atlantic Ocean to the western edge of the state, varying in size from the 271-acre Weston Refuge (a gift with restrictions on hunting) to the Goshen-Little North Mountain Wildlife Management Area of 33,000 acres.

Management activities on these areas vary with the location in the State, game habitat conditions, and soils. Some waterfowl areas are refuges, while some are open to public hunting. Areas in the Piedmont section provide dove fields, small and big game hunting, along with seed production for our annual farm game seed program. Mountain areas provide public hunting for deer, bear, turkey, grouse, squirrel, and raccoon, and wild-trapped wild turkeys for restocking in southwest Virginia. Where possible, fields are leased to private individuals on a share or cash basis. Timber sales are conducted on commercial timber lands. All management activities have as number one priority, "What can be done to improve wildlife habitat?" Number two, "What can be done to help the sportsmen, without harming the game populations?"

Just prior to fiscal year 1968, it was decided to establish on five of our management areas (Goshen—16,236 acres; Little North Mountain—16,603 acres; Highland—17,763 acres; Wunder—1,425 acres; and Rapidan—8,332 acres) a management program using acceptable and profitable land management techniques (timber sales and land leases) as the *only* ecological manipulation practices for game management. Income from these areas was to equal or exceed the annual operating budget, while improving the wildlife habitat.

Two game refuge supervisors full time and one supervisor part time (6 months) with necessary laborers were the only personnel to handle all management responsibilities on the 60,369 acres. These management areas are located in six mountainous counties of the western part of Virginia, within an hour's drive of the headquarters, Staunton.

These areas are predominantly timberlands, oak-

hickory forest type. An estimated 60-70% of the areas are classified as commercial timber lands. Growth rates have a wide variation; such as 60 bd. ft. and/or .4 cord per acre per year on the Goshen W.M.A. to 150 bd. ft. per acre per year on portions of the Rapidan W.M.A. A large portion of the Highland W.M.A. had been heavily logged (11,000 acres of the 17,700 acres) in the immediate 10 years prior to purchase. Available markets influenced what could be done in the way of timber sales. For example: Goshen, Little North Mountain, Highland are within trucking distance of West Virginia Pulp and Paper Company at Covington, Virginia. They will take hardwood pulp, enabling us to make this type sale. The Rapidan W.M.A. does not have a pulpwood market. The Wunder W.M.A. has a limited market for soft hardwoods, via the railroad to West Virginia Pulp and Paper Co., Luke, Maryland.

As a general rule, we plan on a 100 year rotation and a cutting cycle of 20 years. This aids in the determination of the cuttable acres each year. Compartments of approximately 1,000 acres are established, recognizing that the land manager must have latitude for changes as he sees fit for unusual conditions. Most of the timberlands have been "high graded" during the past 50 to 100 years, and there is a need for an accumulation of growing stock both for timber and wildlife purposes. Therefore, annual timber cuts are intended for 40% of the annual sawtimber growth and 60% of the annual products. While the annual objectives are *expressed* in cords and thousand board feet, actually the objective is *acres to be treated* each year.

We use certain guide lines in our marking and selling timber. We sell any black locust wherever we can when large enough to make posts. We mark all red maples to gain deer browse. We aim for an uneven-age forest with 1% to 10% in openings—roadsides, log landings, group selection, and patch clear cutting. We leave all den trees except in very unusual circumstances. We try for a tree spacing of 16 ft. by 16 ft. Certain diameter limits are set for most species depending on site; for example, N. Red Oak—good site 22" diameter, medium site 20" and poor site 18". We favor conifers, for that mixed forest type, which we do not have. We favor leaving oaks on ridges and cut heavier in the hollows to minimize frost damage to the mast crop. There are many such little gimmicks employed to improve wildlife conditions while making timber sales.

Practically all of our sales have been improvement cuts, sanitation cuts, shelterwood cuts, or cuts of a similar nature, to leave a better timber stand in the

forest than it was prior to our cutting. Naturally, there have been variations of this, with harvest cuts in a few old, sometimes over mature timber stands. Even then we have left sufficient trees for future mast production and den trees. Occasional small (2 acre) clear cuts have been made, just to open the forest canopy, remove a lot of diseased or crooked trees and create a forest opening for wildlife benefit.

To be able to make a sale in the mountainous sections, we must mark at least 8 cords per acre to make them economically operable. We have been catering to the 200 cord sale. Our stumpage prices have run around \$1.25 per cord. Sales the size mentioned enable our small operators, who own just a truck, chain saw and a horse or tractor skidder, to be able to do business with us. These people are our neighbors, and we think they are very important. All trees are premarked, volumes estimated and money received before cutting starts. This keeps our neighbors on friendly terms with us.

Our sales have been averaging around 20 to 30 acres in size. Our deer herds are not of sufficient size to cause any concern regarding forest reproduction on sales of this size.

We are required by law to return 25% of our gross timber sales income, less any road construction costs in connection with the timber sales, to the county in which the sales are made. This is in lieu of the tax loss to the county for the land being in public ownership.

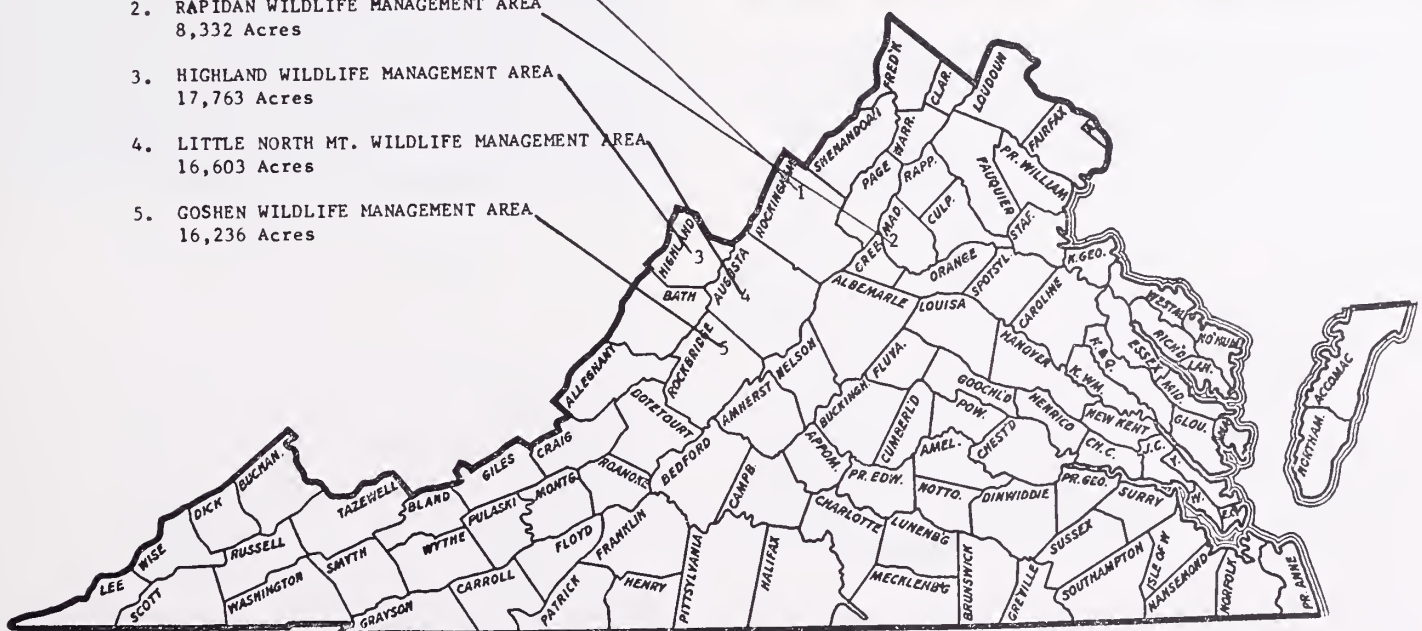
We believe one of our limiting factors for wildlife now is a lack of coniferous cover scattered through the



Above: Uncut timberland shows little evidence of wildlife cover or deer browse. Below: Mountain timber land two years after timber sale provides excellent cover and browse.



1. WUNDER WILDLIFE MANAGEMENT AREA
1,425 Acres
2. RAPIDAN WILDLIFE MANAGEMENT AREA
8,332 Acres
3. HIGHLAND WILDLIFE MANAGEMENT AREA
17,763 Acres
4. LITTLE NORTH MT. WILDLIFE MANAGEMENT AREA
16,603 Acres
5. GOSHEN WILDLIFE MANAGEMENT AREA
16,236 Acres



Location of 60,000 Acres of Land Owned by the Virginia Commission of Game and Inland Fisheries And Managed on a Self-Supporting Basis

woodlands. With this in mind we have been annually attempting to replant 30% to 40% of the previous year's cut-over areas with white pine. White pines are selected because of their tolerance to living in shade conditions when underplanted under the residual stands. We have been doing this long enough now so that the conifers are beginning to be easily seen and may be approaching the need for release by an additional tim-



White pines underplanted in hardwood timber sale area provide additional winter ground cover.

ber sale. Our pine plantings are not in solid blocks, but in clumps and patches of as much as $\frac{1}{2}$ acre each scattered through the sale areas.

We have a few mountain top bluegrass pastures (known as "sods"). We rent these annually to keep them open. Generally, they cannot be mowed, and the past practices were to graze them. We move the cattle off about a month prior to the normal expiration of the grazing season to give the grass a chance to recover before winter. These areas are prime areas for the summer raising of young turkeys and grouse.

The full potential of the timber sales has not yet been realized, but a three year examination of our performance as measured in dollars and cents is as follows:

	Fiscal Year 1968	Fiscal Year 1969	Fiscal Year 1970
Gross Income	\$24,601.53	\$27,052.27	\$28,569.29
Operating Budget	22,762.00	28,000.00	25,600.00
	+\$ 1,839.53	-\$ 947.73	+\$ 2,969.29
Three year Summary: +\$3,861.09, or income of 6¢ per acre.			

While 6¢ per acre profit is not very significant, this is contrary to what takes place on many wildlife management areas. We believe our real profit is the yearly accomplishments for wildlife, and for the sportsmen as indicated in the accompanying summary of major activities.

Over a three year period of time, we have demonstrated the feasibility of controlling the amount of money spent to manage an area to equal the income

SUMMARY OF MAJOR ACTIVITIES

	Fiscal Year 1968	Fiscal Year 1969	Fiscal Year 1970
Man-Days Use			
Sportsmen			
(Hunt & Fish)	undet.	16,415*	18,500
Assoc. Recreation		15,180	18,500
Game Harvest**			
Deer		250	325
Bear	undet.	25	30
Turkey		130	180
Roads			
Maintained	20 mi.	94 mi. #	59 mi.
New Construction	3 mi.	5 mi.	6 mi.
Closed	many	many	3 ea.
Bridge Const.			
(150' cable)	1 ea.	0	0
Boundary			
New Survey		11 mi.	15½ mi.
Repainted	8½ mi.	44 mi.	53 mi.
Sportsman Campgrounds			
Constructed	0	3	3
Maintained	7	10	10
Conifer Reforestation	48 M	18½ M	30 M
Acquisition	562 acres	100 acres	610 acres
Fires			
Prescribed	15 acres	13 acres	8 acres
Wild fire	5 ea.	2 ea.	1 ea.
Acres of Sales		460 ac.	327 ac.

*—Based on weekly observations and submitted reports.

**—Estimated, based on county-wide kill records and knowledge of the areas.

— Acquired a surplus grader.



While management practices themselves are self-supporting, the "profit" is reaped by hunters, such as these camped on a management area during deer season.

derived from the area. While game populations have fluctuated, as have those of the counties in which we own land, over all there has been an increase in the deer, bear and turkey populations. Results have been at least as good as those obtained where the major game management activities are expensive seeding, planting, and mowing, requiring large capital outlays for machinery, equipment and equipment sheds. We think the use of timber sales, leasing of lands, prescribed burns, and reforestation of conifers has given us a good, practical, economically feasible approach to forest land and game management.

CONSERVATIONGRAM

Commission Activities and Late Wildlife News ... At A Glance

STATE GAME DIRECTOR RECEIVES BOAT GROUP AWARD. Chester F. Phelps, Executive Director of the Virginia Commission of Game and Inland Fisheries, has received the Herbert C. Bonner Award from the National Association of State Boating Law Administrators at the Association's annual meeting in Tampa, Florida.

The Bonner Award was established by NASBLA in honor of the late Congressman Herbert C. Bonner of North Carolina who was recognized by the Association as a dedicated worker in behalf of recreational boating and who was largely responsible for the passage of the Federal Boating Act of 1958.

The award is presented annually to the boating official of the federal or state government "who through his performance of duties most thoroughly exemplified the qualities of leadership and dedication displayed by the late Congressman."

Phelps was one of the founders of the National Association of State Boating Law Administrators.

RECORD NUMBER SEEK GAME WARDEN JOBS. A record total of 897 persons applied for the position of Game Warden during the Commission of Game and Inland Fisheries' recent warden recruitment program, reports Law Enforcement Chief John McLaughlin. Basic requirements were that applicants have a high school diploma and be in good physical condition. A written test was given to 490 of the applicants who met the basic qualifications and approximately 106 scored high enough to qualify them for an oral interview. From this group 42 were selected, of which approximately 20 will be offered the position of Game Warden Trainee. These will complete 4 weeks of training at a special school and serve a year apprenticeship before being accepted as regular wardens.

"More of this year's applicants had some college training than in the past," McLaughlin said. "A number had college degrees but some of these appeared to be looking toward temporary employment as a game warden until something better came along," he added. School for the new recruits is scheduled to begin at State Police Headquarters January 17.

VIRGINIAN NAMED TO NATIONAL BOATING BOARD. Virginia Game Commission Boat Registration Supervisor, Florence B. Wade, is one of twenty-two Americans named to a new Boating Safety Advisory Council, according to U. S. Secretary of Transportation John A. Volpe. The Council, which will be consulted on matters pertaining to the ever-expanding field of recreational boating, including the need for prescribing new regulations and standards, will be chaired by Edward J. Heine, Jr., a yachtsman and president of the United States Lines, Inc., a shipping company headquartered in New York City.

Members of the council were drawn equally from administrators of state boating programs (six), boat and equipment manufacturers (seven), and from the boating public. Coast Guard Commandant Admiral Chester R. Bender rated the appointees as "from among the most knowledgeable Americans involved in boating," and stated, "I am confident that the Boating Safety Advisory Council will greatly assist in Coast Guard efforts to improve boating safety and foster greater development, use, and enjoyment of all the waters of the United States." The council will advise on performance and construction standards for boats and accessory equipment and on boating safety regulations and programs.

Initial appointments were made for one, two, and three years, and Mrs. Wade's appointment was among those who will serve for three years. All new appointments to fill expiring terms will be for three years.

A GROUP of beavers at Quantico are a "dam site" better off than many other amphibious rodents.

Marines offered a challenge, hoping to break up the gathering of buck-toothed *Castor canadensis*, but the furry floaters found something they could sink their teeth into . . . and they did!

To fully appreciate the Marine problem, you must first understand Quantico. It's big . . . 62,000 acres big. And the Marine Corps Base is very wet in places.

Weather contributes to the Quantico problem. Heavy rains bring swollen reservoirs, creeks and streams. During the sullen southern summer, pools of water evaporate, and the sun's rays cause dry earth to pucker and crack into a soft dust.

During this hot, dry spell, fire is a hazard. The base is a network of access roads, zigging off main arteries and into fields and woods. Firemen and trucks careen down these arteries to reach blazing grass or pine.

A recent blaze charred nearly 500 acres of woods, although Marines of The Basic School, Schools Demonstration Troops and a unit of the Army National Guard battled the blaze for nearly three days.

That, then, is the problem. Access roads, dry timber and those damn dams!

"We sweated and grunted," said B. W. Windsor, Quantico's Wildlife Manager. A big man, he stands tall, yet moves easily. With a crew cut, you might easily mistake him for a Marine . . . which wouldn't be a mistake.

He retired as a major, and the title is a courtesy still extended.

He and his crew, along with the foresters and Marines, cleared a strip of land 150 feet wide and five miles long. They laid culverts so water might flow uninterrupted *under* the road, instead of washing out the approaches and preventing access of fire-fighting ve-

SSgt Clarence E. Wright examines beaver's progress in felling a tree. This dam flooded an important fire-fighting access road.



QUAN EAGER

By MSgt TOM BARTLETT



hicles to potential burn areas. The "strip" cost \$8,000.

Prior to the construction of the strip, vehicles would enter an area, come to a wash, reverse, turn, use another road and continue until approaching another wash or until they got stuck in the mud.

The strip provided a straight shot for vehicles en route to a fire. Well, it did for a while, anyway. Until the beavers got into the dam act.

About a half mile off a main road, there's a pool of water. It doesn't move fast, and it isn't particularly deep. As the Marines cleared the access strip, they put in a culvert which dropped the level of the pond, somewhat.

The beavers got mad, apparently. After gnawing down a tree, they dragged it across the pond, then jammed it into the culvert. Then they sat back and waited for nature to take her course.

"I drove down here on a routine check," SSgt Clarence E. Wright said. He's the range office fire Marshal. "I came around the bend and had to stop. The

VIRGINIA WILDLIFE

QUANTICO'S BEAVERS

Reprinted by permission from the *Leatherneck*, Magazine of the Marines.



Photo by Leonard L. Rue III

beavers had dammed the pond, but good, and the water was about a half mile from the road, and still climbing."

They called Explosive Ordnance Disposal, who came out and placed an explosive charge. They blew the dam. The culvert was replaced.

Two weeks later, Wright went back to check. The beavers were rebuilding, and the water was rising again.

"Now it's a contest. Sure, we could come down and trap them or shoot them, but we don't want that. We'll have to figure something out which will make the beavers happy and still give us access to fire areas," Wright said.

Why not shoot the beavers? Better to kill an animal than to have another 500 acres go up in flame, which also kills animal life and makes refugees out of countless deer, rabbits, fox, turkeys and quail.

Quantico has been, and continues to be, conservation conscious.

"Our program of conservation is, and must continue to be, one of professional managerial methods so that

we may control our assets and maintain our favorable level of resources, despite the ever-rising usage level," wrote General Raymond G. Davis, Assistant Commandant of the Marine Corps.

"At Quantico, we have been most fortunate to inherit an abundance of beauty and natural resources. However, it is our obligation to improve, protect and utilize these resources effectively so that they may be enjoyed by generations to come," the general stated.

Of Quantico's 62,000 acres, 54,000 are in the Wildlife Management Area and 41,000 acres are under Forest Management. The Logistics, or G-4 Section, supervises the activities of the Wildlife Manager, Game Warden, Conservation and Range Officer. They're all in one building, and their duties often overlap.

Although it sounds confusing, it works like this. When Maj Windsor was on active duty at Quantico, he served as Range Officer, Game Warden and Fire Marshal. When he retired from the Marine Corps, he changed from the tropical worsted uniform into a set of green, as worn by the Conservation Commission, establishing a new office.

He was replaced, militarily, by Maj Evan C. Werner.

The two have much in common. Windsor enlisted in the Marine Corps in 1944 and served as an enlisted man until 1953, when he was selected, as a technical sergeant, for commissioning to second lieutenant. While in Korea, he was a platoon sergeant with 3/7, leading an anti-tank assault platoon.

During an intense battle, he was wounded and appeared dead. Before he could be rescued, North Korean communist soldiers prodded his body and assumed he was KIA, then took his watch and left him there. His heroism during the battle earned him a Silver Star Medal.

LCpl Gerald G. Pringle and SSgt Wright at site of dam beaver repaired after it had been blown out with an explosive charge.



Maj Werner enlisted in 1951 and served with Weapons Company, 2/7, as a flame thrower operator in Korea. He was commissioned in 1960. Assigned to Quantico from 1967 to 1969 as Range Officer, he returned to the same post following a year with the First Marine Division in Vietnam. While with the division, he was awarded the Navy Commendation and Joint Services Commendation Medals with Combat "V" and the Purple Heart Medal.

Both are deputized as U. S. Department of Interior Game Wardens. In addition to preventing fires, protecting game and government property, they also provide a Base security against poachers.

"We've issued 97 citations," Maj Werner stated. "And that's in less than a year. They've been for both state and post violations. Of the total of 97, we've gotten 90 convictions which resulted in \$11,000 in fines.

"Eighty percent of these citations are for illegal shooting of deer. Spot lighting.

"We've got game wardens from three counties who come here and stake out areas," he said. "I can't tolerate poachers. Blind an animal with a brilliant light, then shoot it. And they call themselves 'sportsmen!'"

You can't remain stationary in the office located at the far end of Camp Barrett. If you stand in one place too long, you're bound to get trampled.

The telephone continually jumps, and Marines and civilians alike are constantly on the move. As you enter,

Quantico hunters do well. Last year they harvested 1002 deer.

L. L. Rue photo



you'll find the outer office spacious and clean. There's a range operations assistant behind a long desk.

Behind him is a smaller office. To his left is a series of cubby-holes with desks, and the sound of desk drawers, telephone receivers, scuffling feet and good-humored conversation.

This is the nucleus of Quantico's boonies. The men in this office know every road, trail, apple tree and helicopter LZ (landing zone.) They know the depth of each creek; most know the depth of each rut and how far they can drive through a mud bank without getting stuck.

Getting stuck is one of their job hazards. You can't maintain a knowledge of an area without constant study, and you can't check roads without driving.

When that recent fire cleared 500 acres, the knowledge of the roads and trails paid off. Had the fire not been checked, or had the unit not responded properly and quickly, many more thousands of acres and many more animals might have been destroyed by flame.

"An Air Station helicopter saw the smoke and investigated. We got the call a little while later," commented SSgt Wright, between chews of tobacco. Prior to a year in Vietnam with the Fourth Combined Action Group near Dong Ha, he had served as a smoke eater at Quantico for two years.

"I still remembered most of the roads, but some had been cleared since I left. Anyway," he continued, "we have two vehicles, always ready to go, with five to seven men in a section."

The trucks are equipped with backpacks and pump extinguishers of water.

"We got out to the fire, and the wind was whipping it up pretty good. We headed it off, then got a truck stuck. The wrecker came out to pull our truck, and it got stuck. Meanwhile the fire got closer and closer."

The Marine vehicles were freed, but the fire, spurred on by a hefty breeze, continued eating pine. That's when the call for help was sounded. The battle went on for nearly three days.

"We put one section out three times," Wright exclaimed. "We'd soak an area, then leave to fight some place else, and sure as hell, that other place would dry out, start to steam and burst alive again.

"We've got a good crew. They stopped it from jumping the access road. Damned good thing they're well trained in their jobs," he said.

Today, conservation, ecology and pollution are grave matters. Suddenly smog, dirty water and waste are of major concern. The fact of the matter is, major Marine Corps posts and stations have been concerned and involved for a good many years! So have the Boy, Girl, Sea and Explorer Scouts of America.

Quantico, for example, has been environment conscious since 1917. They've been concerned with soil erosion, forestry management and conservation education. It hasn't been on such a grand scale as it is today, but nevertheless, they've been doing something besides planning, talking and shaking their heads and saying "tsk, tsk."



Major B. W. Windsor checks a deer salt lick.

Recall that Quantico consists of 62,000 acres; 54,000 acres of which are in the Wildlife Management Area; 41,000 acres are under forest management. Last year, 3,772 acres were improved for wildlife by burning, disking, brush cutting or planting; 820 acres were treated by forestry management; 36 acres of ponds and three miles of trout streams were improved.

Several acres of road shoulders and other eroded areas were treated to retard erosion. Several miles of access roads were graded, cut and planted to wildlife foods.

The Game Management Section attempts to treat 10 percent of the base area yearly to improve food conditions for game or retard ecological plant succession for the benefit of wildlife. Technical assistance and cooperation is furnished by the Virginia Game Commission.

Last year, during the winter months, 250 acres of red clover and Korean lespedeza were planted. Bird and deer feed on these plants.

Last spring, bird mix, buckwheat, soybeans, brown-top millet, sericea lespedeza and corn was sown over 250 acres for wild dove, grouse and quail.

Six acres of Japanese millet were planted last summer, and during the fall, 217 acres of ladina clover, wheat and orchard grass were sown.

Sections of ground are measured out and plowed. A third of the section, or a "strip" is planted. Next year, the middle section will be sown, and the third year, the final segment of the strip seeded. This, then, is the form of crop rotation practiced by Quantico.

As for restoration, 31 acres were improved against erosion; 983 acres were mowed or chopped, and 2,150 acres were burned for a total of 3,772 improved acres for 1970.

Seven house sites were cleared. This sounds like a "cumshaw" or a personal endeavor, but it's actually far from it.

Homesteaders settled the Quantico area a couple of hundred years ago, and they built homes and barns. They planted fruit trees and cleared adjacent lots.

"Some of these old homes date 'way on back. I just don't know," smiled Wildlife Manager Windsor, deep furrows lining the corners of his mouth.

"One of the sites had a plaque dated 1732 and stated 'the First Prince William County Court House.'

"And we've got some old graveyards with graves marked in the early 1700's."

He explained that though the homes have crumbled with age, the fruit trees still bloom and bear fruit, attracting many small animals. The Quantico Wildlife Conservationists watch these sites, pruning the trees and cutting away brush and vines from clearings.

Clearing house sites also provides "edging," which is desired for the protection and security of game. Edging" is a term describing a change from grass to rough to woods or from field to woods to forest. Sort of from one extreme to another.

Low cut areas provide seed and grass; thicker vegetation provides bug life and dense woods or forest provide the needed security and protection against predators, such as man.

Ironical that man destroys what he creates; but it is also true, that as man destroys, he may also improve upon his creation. That bit of double-talk works out for the benefit of the Quantico wildlife and preservation of natural resources.

An exercise is kicking off at Quantico. Tanks and amphibious tractors grind down muddy roads in support of ground troops. During the maneuver, the tracked

Conservation non-commissioned officers plow and fertilize a strip for wildlife planting. The goal is to treat ten percent of the entire area per year.



vehicles turn and churn, creating ruts and mounds which will fill with rain water and stagnate.

As these maneuvers progress, perhaps a helicopter landing zone will be required, and grunts will clear an area by hacking down brush or cutting away tall grass.

When the exercise draws to a close and the critique has been held, the area remains chewed and torn. The Marines usually move through the area, picking up emptied cans and cartons, but the earth itself is misshapened and scarred.

It doesn't remain uncared for very long.

"We'll go in and plant these areas, especially the LZs," Maj Windsor said. "They're always hacked out of flat, level areas, ideal for our purpose."

Also, preparing training areas, a Quantico forester will enter an area and mark trees for cutting.

Last year, 783 acres were cut or thinned as three and a half million board feet of sawtimber and 2,000 pulpwood were felled, for which the government received \$55,000.

Loblolly pine and white pine seedlings were planted on 40 acres.

As Quantico continues downing the old, clearing the damaged and planting a new crop, so, too, do they control wildlife. Because of a continual patrolling of the base, game animals seek refuge on the Marine reservation.

Hunting is permitted by personnel stationed at Quantico and their guests, and a minimum of 10 percent of the daily hunting spaces are allotted to off-base personnel. This figure (that of the daily hunters) is carefully controlled.

They figure one hunter per day per 80 acres. This daily figure changes, because the number of hunters is controlled by the number of acres not being used for training.

In order to hunt (or fish) on the base, it is necessary to possess a valid state license, and then to purchase a base license, which costs two dollars. (Money for the sale of licenses is used to purchase seed and to assist in Quantico's conservation program.)

Hunters then line up for registration. Prior to being permitted to take to the boonies with loaded weapons, they must first attend a safety lecture, during which time an instructor reminds them of laws and proper methods of handling weapons or discharging firearms.

"Some think of the lecture as a pain in the neck," Maj Werner commented, "but we must be doing *something* right. We've only had one accident since 1962, when a bullet grazed a hunter's toe. Considering the number of hunters we've had, we're damned proud of that record, and aim to keep it going."

Hunters do well at Quantico. Last year, for example, 1,002 deer were harvested, as well as 31 turkeys, 1,668 squirrels, 1,812 rabbits, 1,564 quail, 178 grouse, 667 doves, 353 ducks and 62 woodcocks. Because hunters must check out prior to departing the base, the game

warden and his men can maintain very accurate records of the harvest.

The Virginia Game Commission assists the Marine Base both in law enforcement and game management. They also provide technical advice. But then, it works both ways. Because of Quantico's accurate kill-count, they can offer figures and studies to State biologists.

Because of this close working relationship, both Majors (Werner and Windsor) have two-way radios in their trucks which are tuned either to the Virginia Game Commission or to their own Base operation.

Quantico consists of approximately 7,000 Marines, 1,500 civilians, 5,500 deer, 350 turkeys, 200 coveys of quail, 450 grouse and many rabbits, squirrels and beavers. To permit them all to reside in a peaceful coexistence depends a great deal on wildlife management and conservation.

Last year Maj Windsor was named the Wildlife Conservationist of the year from the State of Virginia. The Commandant of the Marine Corps has recognized the efforts of the section at Quantico, presenting them with Conservation Awards in 1962, 1963, 1966 and 1967, as well as awarding them four meritorious achievement certificates.

"Colonel George Babe is the Base Logistics Officer," Maj Windsor pointed out. "Our sections fall under his department. We do our job as we see it. We're not hamstrung in any way. And," he added, "we have a fine crew of people working with us."

"No *one* man deserves an award. A section working together makes a man look good, and that's what happened here. We all pulled and sweated and because it was in my department, I got the recognition. Too bad you can't slice up an award. . . ."

Windsor was referring to people like SSgt Wright, the Fire Marshal; Sgt Edward A. Sulewski and SSgt Earl McKay, operations assistants; GySgt Charles D. Lashley, Range operations chief; and firemen, Cpl George Gaiser, Cpl Oscar Hasse and Pvt Patrick Harzinski.

Others are GySgt Kenneth L. Connett, Noncommissioned Officer in Charge of the Conservationists, and his assistants SSgt Michael E. Null and Sgt Cornelius Tindal; Game Warden Maj Werner, and his assistant, Sgt James B. Petrakovitz; and Marines being released from active duty, but working with the section through Project Transition, such as Cpl Michael Love and Sgt Stanley Causey.

Different men; different jobs . . . same interest; same goal.

They all contribute to the betterment of a Marine base and to the future enjoyment of those who will be transferred there in months and years to come.

In their own way, they contribute to the immeasurable success of the program. Even the beaver and his damned dam . . . because, once a solution is obtained and the problem of the flooded access road is resolved, another measure of success will have been attained . . .

Reforestation of Virginia Timberlands

By E. E. RODGER, *Chief
Forestry Relations
Division of Forestry*

THE new Reforestation of Timberlands Act has been well received by Virginia landowners. By November 1, just four months after the effective date of the act, 331 persons had signed up for incentive assistance on 18,500 acres of land.

What is this new act? Why did the Governor, the General Assembly, forest industry, forestry associations, landowners and others work so hard to hammer out an effective piece of legislation that was unprecedented for the Old Dominion?

The factor that triggered the emergency action was the alarming information revealed by the 1966 Virginia Forest Survey. It was learned that the annual cut of pine species was exceeding the annual growth by 15 per cent. Furthermore, the reports of the Southern Third Forest and the Virginia Commission of the Industry of Agriculture's report to the Governor emphasized the urgency of providing remedial action.

Virginia's economy is based solidly on her forest resource. Anything that adversely affects the resource, adversely affects the Commonwealth. More than 64,000 Virginians depend directly on the forest industry for their livelihood. The value of manufactured forest products approximates one billion dollars annually. These are tangible, measurable values. Other values that are more difficult to measure in dollars are recreation, watershed, tourism, and environment. It is safe to assume that these combined values are in the billions of dollars.

The new act, designed to encourage better timber management, provides incentive payments amounting to as much as 30 dollars per acre for preparing land for reforestation and reforesting with pine.

More specifically, the incentive program is divided into three options, the selection of which is the choice of the landowners.

Option One permits the landowner to use available specialized state-owned equipment, tree seedlings, tree seed materials and specialized state personnel for preparing and reforesting land without charge to the extent of 50 percent of the total cost of the project but not exceed 20 dollars per acre. The State Forester is encouraging the involvement of private contractors and will make state equipment available in those areas not presently covered by contractors. Hopefully, more people will enter the land preparation and tree planting business, thus permitting most of the landowners to apply for options two or three.

Option Two permits the landowner to use his own equipment, material and personnel or employ contractors to prepare and reforest land. The work must be approved by the State Forester and the rates for equipment and personnel shall be in line with current rates established by the Reforestation Advisory Committee. Incentive payments for this option are the same as for Option One—50 percent of the total cost of the project but not to exceed 20 dollars per acre.

Option Three permits the landowner to use state personnel, equipment and materials; employ contractors or use his own equipment and materials to prepare and reforest land. Upon approval by the State Forester, the landowner may receive up to 75 percent of the cost of the project or 30 dollars per acre, whichever is the lesser. This option requires a thirty year interest free lien on the reforested land and the trees planted thereon.

Under Option Three timber may be cut from the land



Left: Charles City County loblolly pine plantation, eighteen years old and ready for a pulpwood thinning. Right: Typical heavy undergrowth that covers many acres of Virginia land, which foresters recommend replacing with pine. (Note similarity to grouse cover being worked by hunters in photo on page 4.)





One of the latest innovations, this mechanical rough land tree planter can plant 8,000 to 10,000 seedlings per day in rough going.

Reforestation

(Cont. from p. 19)

at any time it has commercial sale value before the expiration of thirty years, but only after notifying the State Forester and repaying the loan in full without interest. Should the landowner elect to cease growing timber on the land under lien, and use the land for other purposes, he may do so but only after notifying the State Forester and repaying the amount of the loan plus interest at the rate of five percent compounded annually from the initial date of the lien.

Assistance under the Reforestation of Timberlands Act does not apply to any acres on which the provisions of the Virginia Seed Tree Act are effective nor to any acres receiving federal financial assistance for growing timber.

The number of eligible acres for each person or company will be determined each year by the Reforestation Advisory Committee and the State Forester and shall not exceed 500 acres in any one year.

Financial assistance will not be given for growing Christmas trees as a primary crop nor for growing trees for ornamental or landscaping purposes.

In anticipation of the public acceptance of the financial incentives available under this new legislation, the State Forester ordered increased pine seedling production at the two Division of Forestry nurseries. The seedling crop was sown in April and seedlings will be ready for distribution to landowners during the planting season of 1972.

Because millions of pines must be planted during the rather limited winter and early spring months, pri-

vate contractors, forest industry, large landowners and the Virginia Division of Forestry have purchased open land and rough land tractor-drawn tree planters. These machines are capable of planting 8 to 10 thousand seedlings per day. Recognizing that some areas are not suited to the use of mechanical planters, there are quite a few hand planting crews in the state but many more are needed.

Much of the land that will be enrolled under the Reforestation of Timberlands Act is now growing undesirable brush, requiring specialized equipment and techniques to ready the land for tree planting. Some of the equipment that seems to do the best jobs are rolling drum choppers, large bush and bog discs, K-G blades,



Hand planting an area cleared by bulldozer. One man can plant approximately 800 to 1,000 tree seedlings per day.

and bulldozers. Prescribed burning is often used as a part of the land preparation program. Prescribed burning can be dangerous, so it should be done only under the supervision of experienced personnel.

Some areas may be well stocked with pine species which are in need of releasing from the competition of undesirable hardwoods. In such cases spraying with herbicides by aircraft, by tractor mounted mist blowers, or by use of backpack units is often the only treatment that is needed to provide the landowner with a healthy young pine forest. Financial assistance is available for this practice under the Reforestation of Timberlands Act.

The Virginia Division of Forestry has as one of its major objectives, "To promote the development of forestry contract operators throughout the state to insure a free enterprise approach to getting required forestry woods work accomplished." To help with this

objective, the Division has 25 rolling drum choppers; 10 heavy bush and bog discs; 7 rough land mechanical tree planters; 42 open land mechanical tree planters; 10 backpack herbicide sprayers; and other specialized equipment available for rent to contractors or landowners at reasonable rates.

To help with prescribed burning the Division of Forestry will examine the area and write a burning plan. To help with the actual burn, the Division will plow control lines, provide an experienced supervisor and, in areas where contractors are not available, will provide hourly laborers. These services are available to landowners at the current rates of similar equipment and/or labor. For example, tractors of the TD-9 or D-4 class will plow fire control lines for \$12.00 per hour plus the operator's time of \$2.75 per hour.

The act is being financed by increased tax rates on pine lumber, logs, veneer bolts, piling, posts, pine cordwood, and other pine products. This self-imposed tax increase testifies to the concern on the part of the forest industry. The industry asked that the General Assembly match, from the General Fund, the increased revenue received from the special tax. This was done (the act was passed without one dissenting vote) and is expected to provide a grand total of 1,200,000 dollars annually to be used primarily as incentive payments to Virginia landowners.

Industrial foresters, consulting foresters, and the Virginia Division of Forestry personnel are prepared to assist Virginia landowners in managing their woodlands and assisting them in taking advantage of the incentives available through the Pine Reforestation of Timberlands Act.

To remove brush and prepare planting sites, heavy bush and bog discs, rolling drum choppers, bulldozers, and prescribed burning are used. This is a heavy bush and bog disc in action. The Division of Forestry has heavy equipment available for rent to Virginia landowners.



Three More Grouse

(Continued from p. 5)

companion on a grouse hunt, willing to go when no one else will tackle the rigors of the sport. A dog, too, can help deal with the trickery of a grouse. He can help rob the bird of those hair-raising surprise flushes. Oh sure, grouse won't hold for a dog like quail. Grouse don't do anything like other birds do. But a good dog can improve your score. He can do this, alone, by retrieving the birds you bring down.

Getting a good one, however, is the problem. For a dog to handle grouse well, he must possess a greater variety of finely-honed qualities than any other gun dog. He must deal with a quarry that is both wise and wary.

Out of the corner of my eye, I noted my dog on point about the same time I spotted movement at the base of that oak tree. A grouse! The bird actually was slow getting up. Can you believe that! As his wings began to thunder, his tail feathers flared out like a rudder. He was big. He looked almost as large as a turkey hen. It was an easy shot. He was close. I had not been presented such a simple shot all season.



A good dog helps rob grouse of some of its deceit.

My shotgun flew to my cheek. The barrel almost seemed to reach out and touch the bird's tail feathers. He flew straight away along the path of the fence. I grinned with confidence.

BOOM!

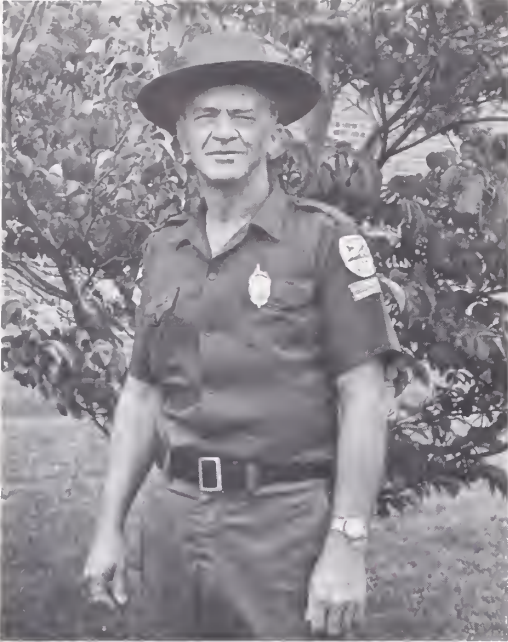
I missed. How? I pumped in a second shell. The target was still straight away, still easy. BOOM! You guessed. The bird winged on as the pungent smell of gunpowder filled the crisp air. I had time for still another shot, but I relaxed my gun. The grouse had won.

My dog looked at the fast disappearing blur of brown, then at me. Alone, he dashed out to search the underbrush. He had grown unaccustomed to misses. But I realized that my sport was just evolving back to its true prospective. It was my winning streak that crashed this time, not a bird.

"Come boy," I called to my dog. "Let's find another. We've got three more to bag for the 'Old Lady's' dinner."

Know Your **WARDENS**

Text and Photos by F. N. SATTERLEE
Information Officer



FRED BROWN

On September 1, 1948, Fred Brown, a native of Konnarock, Virginia, joined the Game Commission as a Warden and was assigned to duty in Fairfax County. He served in northern Virginia until December 1, 1962, when he was promoted to Game Warden Supervisor. In that capacity he is responsible for the activities of twenty wardens and the twenty-two county area known as the George Washington District. The "George Washington" is probably one of the most unique districts in the state, considering that it includes both the mountainous areas to the north and west and portions of the tidewater area on the southeast. This geographic variety provides an accompanying variety of interesting and challenging enforcement problems for Brown and his men.

Mr. Brown is married to the former Viola Stringer of Greencove, Virginia. They make their home in Fredericksburg.

MELVIN R. JOHNSON

Summer vacations spent at his grandmother's farm in Buckingham County and the influence of parents who knew, loved, and respected the outdoors and wild animals played a major role in Melvin R. Johnson's decision to become a Game Warden. He joined the Virginia Game Commission in that capacity during September of 1962 following three years' service with the U. S. Navy.

Initially Johnson was assigned to Nottoway County. Later he was transferred to Lunenburg County where he is presently assigned. His greatest satisfaction as a warden is the opportunity to meet a wide variety of people and to help them understand the law, wildlife, and the outdoors. This is especially true when he works with young people.

Both Mr. Johnson and his wife, the former Sandra Kemp, are originally from Roanoke. They have two children, a boy and girl, and currently live in Kenbridge, Virginia.



ON THE LIGHTER SIDE

By TONY PHOENIX

HOW TO STAY IN TROUBLE ALL THE TIME

WHAT happens to the man who always puts things off?

Oh, lots of things. Lots of things.

I ought to know. If there are national and international records for procrastination, I hold them both. I haven't checked yet to see if there are such records. But I'll get around to it.

Putting things off has become a way of life.

For instance, a rubber raft sank with me one time because I failed to patch it as well as it should have been. I knew it needed patching. The vibrations just hadn't been strong enough to get me to do it.

As the raft slowly sank on a remote stretch of the James River where a friend and I were duck hunting, I vowed if I survived that this would be the last time I'd ever put anything off. But we were lucky. We sank on a sand bar, got wet only to the waist, and had to carry our gear less than two miles to a highway. I figured later over a fire that I might have been too hard on myself, making such difficult promises.

(I didn't change a life style, but I had to change one duck hunting friend.)

It's especially easy to get in trouble with the wife if you put things off.

For instance, I came in from a quail hunting trip late one afternoon just as a poker-playing friend pulled into the driveway.

"Norman's wife has gone to her mother's for the weekend and he's got a game going," Al said.

That was enough. I slipped off my heavy hunting coat, hung it on a nail alongside the basement steps, and took off.

It was cool in the basement, I reasoned, and I could clean the four quail in the game pocket of the coat when I got back a couple of hours later.

The boys proved harder to whup than I'd planned. I played through the night and forgot the quail completely—for 10 days.

I'd rather not go into details of the discussion that followed when darling wife finally located the source

of the smell that had offended everyone from the Avon lady to the preacher.

Here's another thing that makes my face burn when I think about it.

A friend and I had driven my Jeep off the highway and into a field to unload the bird dogs and start a day of bird hunting.

"That ground looks soft," he said with uncertainty as he stretched to see over the hood.

"No sweat," I assured him. "I have four-wheel drive."

I failed to tell him, though, that I had not yet changed to mud and snow tires. I'd been so darn busy. . . .

Then it happened. We hit a small soggy ditch and both front wheels went in to the axle. He was so mad I thought he was going to sic a bird dog on me when he climbed out through the mud and saw those regular tires still on the vehicle.

"Don't get your underwear in a knot!" I told him. "I'll get us out in a minute. You push while I rock the Jeep by racing the motor."

He pushed and slipped and grunted while I raced the motor and shifted rapidly from low to reverse and back. We almost had it out of the hole when suddenly the motor stopped dead.

I got a sinking feeling in the pit of my stomach. We were out of gas. I had decided to put off filling the tank until later in the day. I guess I was trying to wean it.

I offered to take the gas can and walk to get gas. I didn't even ask him to go. It was getting to the point where I didn't like his attitude any more. Funny thing, too, because he'd been in a good mood when we started that morning.

Other things happen to the man who puts things off.

I have driven half a day to get to a favorite fishing hole only to find that I don't have any hooks when I get there. I'd failed to replace the ones I lost the last time I went fishing.

Rust will surely form on your favorite shotgun if you fail to clean it occasionally. I know.

Sometimes procrastination can be both embarrassing and expensive.

The bitterest medicine of all to take was dished out shortly after the beginning of this hunting season.

The dog and I had just come from a field where we knew a family of quail had set up housekeeping. I was standing beside the car, congratulating the dog on a good morning's work and removing my hunting coat which contained eight plump quail when the game warden drove up.

I bragged on the dog, on my shooting ability, and on the fine quality morning it had turned out to be.

The warden was friendly and agreeable.

He waved his hand as he started to leave and then, almost as an afterthought, added "Oh yes, I guess I'd better check your license."

"Certainly," I said and reached for my billfold—then fainted dead away as it hit me.

I had waited until the last day—and then forgotten—to renew my hunting license.



Edited by HARRY GILLAM

Lake Drummond Bruin



Ralph Steelman of Virginia Beach, an aviation Machinist Mate at Oceana Naval Air Station, killed this 300 pounder, his first black bear in a lifetime of hunting, while hunting with the South Side Hunt Club at Lake Drummond in the Dismal Swamp.

Winged Predators Threatened

Recent studies by Oregon State University and the National Audubon Society indicate that hawks and owls continue to decline throughout the country, some of them spectacularly. Loss of habitat through logging of mature timber stands was a major factor in the decline of some species, notably the goshawk and spotted owl, according to the Oregon studies. Generally declines in raptor numbers have been attributed to the effects of DDT and other pesticides residues, loss of habitat for nesting, and most recently, the possibility of mercurine chloride poisoning. Additionally, large numbers of hawks, owls, and (as was well-noted recently in Wyoming) eagles are still being shot, despite the fact that it is illegal in most states including Virginia.

Trapper Makes Surprise Catch

Bath County Game Warden Donald Miller relays the following tale about Game Commission trapper Gerald Blank. It seems that Gerald had been requested to remove some troublesome beaver from a private trout pond belonging to Phillip Hirsh of Warm Springs. The first night's work pro-

duced a healthy 40 pound beaver which was later released in a more suitable area. The second night the basket-like trap yielded a 5½ pound rainbow trout which was still alive and active the following morning. It was turned over to the owner who reported it made a delicious trout dinner for four.

Northern Pike



News-Virginian photo by Winegar

Hansford Vest of Stuarts Draft laid claim to a new state record after landing this 17 pound northern pike from Beaver Creek Lake, part of the Charlottesville City Water Supply System. Mr. Vest was fishing a No. 3 Mepps spinner on a spinning outfit equipped with an 8-pound test line when the 39 inch lunger hit. Commission fisheries biologists think this was one of 200 northern pike stocked in 1965.

First Legal Deer From Clinch Mountain Area



The first deer to be legally taken from the Clinch Mountain Wildlife

Management Area was killed October 15, 1971, by Mr. Wiley Smith of Council, Virginia. The Clinch Mountain Area was opened for the first time since being purchased by the Commission in December 1961. The area had been closed for ten years for stocking.

Mr. Smith reported this was his first kill with a bow and arrow, although he had previously taken three deer with gun. The doe deer killed was aged by game refuge supervisor James D. Haulsee (shown on the right with Mr. Smith) to be 2½ plus years old and gave evidence of being in excellent physical condition. Haulsee, a veteran of more than seven years with the Commission, had the privilege of checking the first deer taken from the area he manages.

Junior Kill Spooks Trophy



Commission photo by Kesteloo

Ken Graves, left, of Richmond gets an assist from hunting companion "Trav" Epes in dragging out a nice spike buck that cost him a chance at a real trophy. After shooting the spike, the second deer of his hunting career, Ken approached the downed animal only to see a magnificent 6 pointer eyeing him from only 20 yards away. The pair were hunting in Charles City County.

Whoopers May Be Over the Hump

According to recent government reports, North America's largest bird, the whooping crane, is winning its battle for survival. On the verge of extinction in the 1940's, the whooper population in the wild now numbers about 60. The census of the birds reached its low point in recent years when only 14 were counted on their winter refuge area on the Texas Gulf Coast.



YOUTH AFIELD



Edited by ANN PILCHER

Game Farm Field Trip



Commission photo by Kesteloo

Dr. Spencer Wise, ecology professor, and junior and senior students of Christopher Newport College in Newport News, view penned fawns as they visit with Dennis Hart (center), manager of the Cumberland Experimental Game Farm. Although farm research is limited to production of exotic pheasants, species of orphaned wildlife are occasionally brought here for temporary care until the animals are old enough to fend for themselves in the wild.

Books of Interest

Three books recently published by Doubleday and Co. and selling for \$9.95 each (BIRDS OF NORTH AMERICA, by Austin L. Rand, formerly Chief Curator of Zoology, Chicago Field Museum; MAMMALS OF NORTH AMERICA, by Robert T. Orr, Chairman, Dept. of Mammals and Birds, California Academy of Sciences; and INSECTS OF NORTH AMERICA, by Elsie B. Klots, Entomologist, and Alexander B. Klots (Professor Emeritus of Biology at City Univ. of N. Y. and Research Assoc. in Entomology at the American Museum of

Natural History) are guides to identification and range of all familiar American species—storehouses of information on life histories, habits, and ecological relationships. Many of the numerous illustrations are in color.

Other books published within the last several months on the subjects of environmental conservation, natural history and ecology include: BLOW-OUT AT PLATFORM A, by Lee Dye, Doubleday, \$5.95 (blowout of oil well off coast of Santa Barbara which became "the ecological shot heard 'round the world"); THE DOOMS-



Kesteloo photo

DAY BOOK, by Gordon Rattray Taylor, Fawcett, \$1.25 paperback (deals with every method by which man is carelessly altering his environment); MAKING A LIVING IN CONSERVATION—a Guide to Outdoor Careers, by Albert M. Day, Stackpole, \$3.95 (includes job descriptions and salary ranges in various conservation fields); THE BALANCE OF LIVING, by Margaret Cooper and Linda Mantel, Doubleday Book for Young Readers, \$5.95 (shows how man and

Lunenburg Safety Class



Fifty-one students successfully completed the hunter safety course conducted recently at Lunenburg Junior High by State Game Wardens J. W. Heslep and M. R. Johnson.

animals adjust daily to the environmental conditions around them through an amazing variety of mechanisms which regulate body heat, breathing, acquisition and assimilation of food, sensory perception, and other vital functions; NATURE STRIKES BACK, by John Gabriel Navarra, Doubleday Books for Young Readers, \$5.95 (explains historical aspects and scientific causes of earthquakes, volcanoes, thunderstorms, twisters, typhoons, avalanches, heat waves, tsunamis and other natural disasters); A COMPLETE FIELD GUIDE TO NESTS IN THE UNITED STATES, by Richard Headstrom, Ives Washburn, Inc., \$10 (includes descriptions of bird, mammal, insect, fish, reptile and amphibian nests).

Strange Behavior

Ten-year-old Daryl Booth of Radford, and his father, were fishing Claytor Lake October 22 when they noticed a large fish jumping wildly. Daryl scooped up the 4-lb. smallmouth bass with a landing net and saw the reason for its odd actions: a large bluegill stuck very tight in its mouth.

Blevins' Bass

Donald Blevins holds a 20" 5 lb. large-mouth bass he landed near his hometown of Manassas this fall.



Unlucky Day for Carp

Dorcie McKniff and Elizabeth Harel display their August 13 catches from the Shenandoah's South Fork. The 26" carp was taken on a conventional dough ball, while the 24 inch preferred, of all things, a Japanese beetle.

ON THE WATERFRONT



Edited by JIM KERRICK

Boating Courses Available

Flotilla 32, United States Coast Guard Auxiliary, will conduct a twelve lesson public education course in safe boating, to include use of the compass, rules of the road, basic navigation, boat handling, and many other interesting aspects of nautical knowledge and skills.

The course will begin at 7:00 p.m., January 11, 1972, in Room 125, Quartermaster School, Mifflin Hall, 20th and "A" Avenue, Fort Lee, Virginia.

Flotilla commander William Olmsted Antozzi stated that a fee of three dollars will be charged to cover textbooks and maps needed for the course and that certificates of completion will be awarded at the end of the course.

Flotilla 14-3, United States Coast Guard Auxiliary, will conduct an eight lesson course for the public on basic seamanship and safe motorboat operation at the following location: Gas Light Company, 6801 Industrial Road, Springfield, Virginia. Registration and the first class will be on January 17, 1972, at 7:30 p.m. Next class will be held on January 19, 1972; thereafter, classes will be held on successive Monday and Wednesday nights.

Color slides and motion picture films will be shown, with lectures by qualified instructors on the following subjects: maneuvering, marlinespike seamanship, aids to navigation, charts and compass, rules of the nautical road, legal responsibilities, fire extinguishers and fire control, and safe motorboat operation.

This is a course for the entire family; boat ownership is not a requirement for enrollment. An attractive certificate is awarded upon successful completion of this, the most complete course offered by the U. S. Coast Guard Auxiliary. A small fee is charged to cover the cost of material. For additional information call 280-2688.

Houseboat

You say you'd love to own a boat, but the lady of the house won't hear of it? It can be a problem, especially when you have neglected to clean out the garage (which she has managed to remind you of at least a hundred times) because football games have been on television all weekend. There is one way you may be able to win her over to boating and that's by introducing her to the houseboat.

The modern houseboat resembles a boat much more than it resembles a house. Constructed of fiberglass, steel or aluminum, the hull serves as more than a platform. Depending on the power supplied, some houseboats can reach 27 to 30 mph; as fast as, if not faster than, a cruiser of comparable size.

Why would a houseboat be acceptable to a wife, when another boat wouldn't? For one thing, take a look at the differences in houseboats of yesteryear and today. The old cramped, dark interiors have been renovated into light and bright, spacious and airy interiors. Tiny portholes have given way to expanses of sliding glass. Clammy decks are now carpeted wall-to-wall, and fabrics and finishes are color-coordinated and selected by leading fashion and interior decorators.

Miniscule galleys, with a single burner stove, a couple of storage drawers and a poorly insulated icebox have vanished. In their places are electric and gas combination ranges with three and four burners (any gourmet's delight), built-in wall mounted ovens, combination gas/electric refrigerators

and freezers, and drawers and lockers conveniently located everywhere.

The "head" has also come of age! Pressure water systems supply hot and cold water for showers and tubs. There are built-in vanities, lots of mirrors, and the marine toilet is no longer the Rube Goldberg contraption of by-gone days.

In short, the modern houseboat can be fitted-out exactly like a house. The same furniture you would expect to see in anyone's living room may be found aboard, and interior spaciousness accommodates easy chairs, sofas, double beds and dining room tables.

There is another reason besides innovations of the houseboat itself why the lady of the house might be beguiled into becoming the lady of the houseboat. At the turn of a key she can be whisked off to anywhere—a cove, an island, a hidden beach.

But for you, there is enough motor to pull water-skiers—romance for her and power for you!

One thing which the whole family will appreciate is the price. Houseboats cost approximately half that of comparably-sized other boats.

Do you think your wife would be inclined to accept a houseboat over the traditional boat now? It will give her the home-like atmosphere which she will enjoy decorating and entertaining aboard and will lend the familiar surroundings and duties of home a touch of romance. And you will have room for your television set so you won't miss a single kick-off or touchdown . . . also remember, there won't be any garages to clean out!

A houseboat is a home away from home and can offer many hours of freedom and relaxation.

Courtesy Lin Caufield, Photographers, Inc.



*Bird
of the
Month:*



By JOHN W. TAYLOR
Edgewater, Maryland

Greater Scaup

THE two scaups are separable only under ideal conditions. Close at hand the greenish iridescence of the greater is quite evident, and in flight its longer, more prominent wing stripe is noticeable. Generally, they are simply lumped as "scaup" or "bluebill," as they are called by most hunters.

In some respects, there is considerable difference between the two. The greater is circumpolar in distribution, breeding in both hemispheres, while the lesser is purely an American species. The greater scaup is a hardier bird, breeding and wintering farther to the north. Too, it is more maritime, preferring coastal estuaries and open bays to the smaller lakes and ponds frequented by the lesser.

This latter distinction does not really pertain in Virginia tidewater, however, as both species are likely to occur together in any sizable body of salt or brackish water. The lesser, which is the most common of the two in Virginia, does have more of a tendency to visit fresh water, but this is chiefly during migratory movements.

A flock of scaup in flight is a complete lesson in aerodynamics. In compact formation, they twist and turn erratically, using their large feet as both rudders and

brakes. When, after lengthy reconnoitering, a landing site is decided upon, they drop in with an amazing display of body and wing control—gliding on set wings, slide-slipping with feet thrust nearly skyward and finally landing with feet splayed wide apart.

If hungry, they begin feeding immediately, diving with energy and vigor, usually at moderate depths of 3 to 6 feet when feeding on submerged aquatics like pondweed or wild celery. When feeding on mollusks and crustaceans, they'll go considerably deeper.

Scaup are perhaps our most common diving duck; yet their numbers are nothing like what they once were even a few decades back. Early accounts mention them as "enormously abundant" on the Potomac at Washington, "as far up as Georgetown." They were a common item, along with the more highly esteemed canvas-back, in the markets of Washington. In 1929, when May Thatcher Cooke's *Birds of Washington, D.C.* appeared, both kinds were listed as "very abundant winter residents." Now, because of pollution and other disturbance, they are seldom seen above Mt. Vernon.

To some, such destruction of the natural environment is justified as the price of progress. To others, who have thrilled at the sight of a flight of scaup against the dawn sky, it is a tragedy of great dimension.

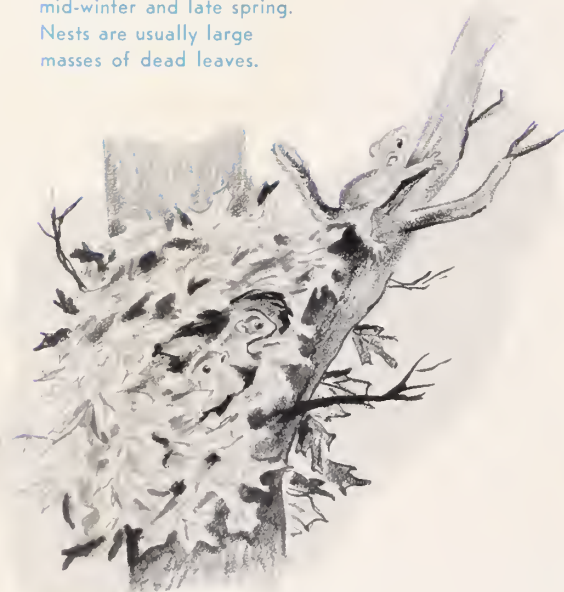


the *Gray Squirrel* story



Natural enemies of the squirrel include the raccoon, hawks and owls, dogs and cats.

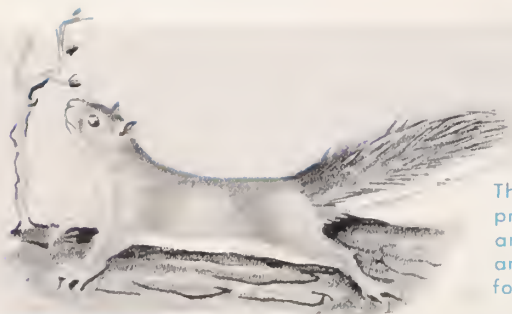
Peak mating periods are mid-winter and late spring. Nests are usually large masses of dead leaves.



The young leave the nest for short periods at six weeks of age. At twelve weeks they leave for good.



A full grown gray weighs from $\frac{3}{4}$ to $1\frac{1}{2}$ pounds. Six years is a ripe old age, but some squirrels have been known to live 15 years.



The gray squirrel is primarily a vegetarian and resorts to buds and twigs when other foods are gone.